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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/642,439 | 08/14/2003 | John H. Brophy | 02-024 | 2458 |

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| EXAMINER | |
|---|---|
| MCDONOUGH, JAMES E | |
| **ART UNIT** | **PAPER NUMBER** |
| 1755 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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| 3 MONTHS | 03/14/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/642,439 | BROPHY ET AL. | |
| | Examiner | Art Unit | |
| | James E. McDonough | 1755 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *22 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,3,5,7-9,11,24,28,32,34-43 and 45-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3, 5, 7-9, 11, 24, 28, 32, 34-43, and45-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Withdrawn Rejections*

(1) Applicant's arguments, see pages 7 and 8, filed 12/22/2006, with respect to the claims 1, 3, 5, 7-9, 11, 24, 28, 32, 34-43, and 45-48 have been fully considered and are persuasive. The rejection of the claims 1, 3, 5, 7-9, 11, 24, 28, 32, 34-43, and 45-48 has been withdrawn.

### *New Rejections*

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(2) Claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Brophy et al. (US 2004/0220434).

(3) Although, Haswell et al. does not teach a microchannel with one wall that is adjacent to a heat transfer microchannel, Haswell et al. does teach using nickel and palladium (column 1, paragraph 1) with a Schiff base ligand that has oxo bridges and is chiral and tethered to a support (scheme1) wherein the support beads are porous (column 4, paragraph 6). However, because Brophy et al. teaches a system having heat exchanging microchannels adjacent to the reaction microchannels without intervening channels that would interfere with heat flow having 10 layers of heat exchangers and 10 layers of microchannels (paragraphs 0018 and 0038; Figure 4), using a micromixer to rapidly mix the reagents before contact with the catalyst (paragraph 0036), having the catalyst coated or grown on the walls of the microchannel (paragraph 0125), having from one to millions of microchannels, the microchannel having dimensions of height and width from about 0.05 to about 10 mm and a length of about 1 to about 500 cm (paragraph 0033), where the walls of the reactor are made of materials such as steel (iron containing alloy) (paragraph 0035), where the inventive process includes the advantage of enhanced reaction selectivity (paragraph 0160), it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teachings of Haswell et al. with that of Brophy et al. with a reasonable expectation of success and the expected benefit enhanced selectivity.

(4) Claims 28, 32, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of

Brophy et al. (US 2004/0220434) as applied to claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, and 47 above, and further in view of Hoveyda et al. (US 2004/0019212).

(5) Although, Haswell et al. and Brophy et al. do not explicitly disclose a dendritic catalyst, they do teach the rest of the limitations of the instant claims. However, because Hoveyda et al. teaches the use of chiral organometallic/transition metal complex that can be in monomeric, polymeric, or dendritic form are stable and recyclable showing superior activity and stereoselectivity, it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teachings of Haswell et al., Brophy et al., and Hoveyda et al. with reasonable expectation of success and the expected benefit of catalyst reactors with high selectivity and stereoselectivity.

(6) Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Brophy et al. (US 2004/0220434) as applied to claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, and 47 above, and further in view of Kang (US Patent No. 3,993,855).

(7) Although, Haswell et al. and Brophy et al. do not explicitly disclose the specific Ni, Rh, or Ir catalyst, they do teach the rest of the limitations of the instant claims. However, because Kang teaches the use of $RhH(CO(PPh_3)_3$ and that it provides selective hydrogenation (column 1, lines 41-45), it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the

teachings of Kang with that of Haswell et al. and Brophy et al. with a reasonable expectation of success and the expected benefit of forming a selective catalyst system.

(8) Claims 43, 45, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Brophy et al. (US 2004/0220434) as applied to claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, and 47 above, and further in view of Chapman, Jr. et al. (US 2002/0182603).

(9) Although, Haswell et al. and Brophy et al. do not explicitly disclose the chloro propyl silanes/amines, they do teach the rest of the limitations of the instant claims. However, because Chapman, Jr. et al. teaches the use of chlorpropylsilane and amino propyl linkers that link a substrate with a support and that such substrate surfaces feature a uniform distribution of attachment functionality (abstract, scheme 1, and paragraph 0039), it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teachings of Chapman, Jr. with that of Haswell et al. and Brophy et al. with a reasonable expectation of success and the expected benefit of uniform distribution of catalyst moieties.

(10) Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Brophy et al. (US 2004/0220434) as applied to claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, and 47 above, and further in view of Ostoja-Starzewski et al. (US 2003/0036474).

(11) Although, Haswell et al. and Brophy et al. do not explicitly disclose the use of metallocene, they do teach the rest of the limitations of the instant claims. However, because Ostoja-Starzewski et al. teaches the use of tethered (linked) metallocenes and that these catalyst allow the formation of defect free polyethylene to a degree not achieved with conventional catalyst, it would have been obvious to someone of ordinary skill in the art at the time of the invention was made to combine the teachings of Ostoja-Starzewski et al. with that of Haswell et al. and Brophy et al. with a reasonable expectation of success and the expected benefit of forming a catalyst that can produce defect free polyethylene.

(12) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

(13) Any inquiry concerning this communication or earlier communications from the examiner should be directed to James E. McDonough whose telephone number is (571)272-6398. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JEM 3/7/2007

Aileen Felton

AILEEN FELTON
PRIMARY EXAMINER